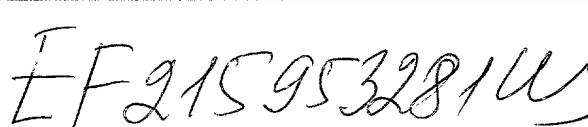


|   |   |   |               |  |
|---|---|---|---------------|--|
| FORM PTO-1390 (Modified)<br>(REV 10-95)   |   | U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE |               | ATTORNEY'S DOCKET NUMBER                   |
|   |   |   |               | <u>1536</u>                                |
|   |   |   |               | U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR |
|   |   |   |               | <b>09/806269</b>                           |
| INTERNATIONAL APPLICATION NO.   | PCT/DE 00/02351   | INTERNATIONAL FILING DATE                               | JULY 19, 2000 | PRIORITY DATE CLAIMED                      |
|   |   |   |               | JULY 30, 1999                              |
| TITLE OF INVENTION<br><b>WIPER BLADE FOR CLEANING MOTOR VEHICLE WINDOWS</b>   |   |   |               |  |
| APPLICANT(S) FOR DO/EO/US<br><b>Paul WYNEN, Dirk HERINCKX, Jurgen ROEKENS</b>   |   |   |               |  |
| Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information: |   |   |               |  |
| 1.  | <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371.   |   |               |  |
| 2.  | <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.  |   |               |  |
| 3.  | <input type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).  |   |               |  |
| 4.  | <input type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.  |   |               |  |
| 5.  | <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371 (c) (2))<br>a. <input type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau).<br>b. <input checked="" type="checkbox"/> has been transmitted by the International Bureau.<br>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).   |   |               |  |
| 6.  | <input checked="" type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)).  |   |               |  |
| 7.  | <input type="checkbox"/> A copy of the International Search Report (PCT/ISA/210).   |   |               |  |
| 8.  | <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))<br>a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau).<br>b. <input type="checkbox"/> have been transmitted by the International Bureau.<br>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.<br>d. <input type="checkbox"/> have not been made and will not be made. |   |               |  |
| 9.  | <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).  |   |               |  |
| 10.   | <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).   |   |               |  |
| 11.   | <input type="checkbox"/> A copy of the International Preliminary Examination Report (PCT/IPEA/409).   |   |               |  |
| 12.   | <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).  |   |               |  |
| Items 13 to 18 below concern document(s) or information included:   |   |   |               |  |
| 13.   | <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.   |   |               |  |
| 14.   | <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.  |   |               |  |
| 15.   | <input checked="" type="checkbox"/> A <b>FIRST</b> preliminary amendment.<br>A <b>SECOND</b> or <b>SUBSEQUENT</b> preliminary amendment.  |   |               |  |
| 16.   | <input type="checkbox"/> A substitute specification.  |   |               |  |
| 17.   | <input type="checkbox"/> A change of power of attorney and/or address letter.   |   |               |  |
| 18.   | <input checked="" type="checkbox"/> Certificate of Mailing by Express Mail  |   |               |  |
| 19.   | <input type="checkbox"/> Other items or information:  |   |               |  |
|   |   |   |               |  |

|  |  |   |
|--|--|---|
| U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR<br><b>09/806269</b> | INTERNATIONAL APPLICATION NO.<br>PCT/DE 00/02351 | ATTORNEY'S DOCKET NUMBER<br><b>1536</b> |
|--|--|---|

20. The following fees are submitted:

**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :**

|  |            |
|--|------------|
| <input type="checkbox"/> Search Report has been prepared by the EPO or JPO .....   | \$930.00   |
| <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) .....  | \$720.00   |
| <input type="checkbox"/> No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) .....   | \$790.00   |
| <input checked="" type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... | \$1,070.00 |
| <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) .....         | \$98.00    |

**CALCULATIONS PTO USE ONLY**

**ENTER APPROPRIATE BASIC FEE AMOUNT =**

**\$1,000.00**

Surcharge of **\$130.00** for furnishing the oath or declaration later than  20  30 months from the earliest claimed priority date (37 CFR 1.492 (e)).

**\$0.00**

| CLAIMS             | NUMBER FILED | NUMBER EXTRA | RATE      |               |
|--------------------|--------------|--------------|-----------|---------------|
| Total claims       | 13 - 20 =    | 0            | x \$18.00 | <b>\$0.00</b> |
| Independent claims | 1 - 3 =      | 0            | x \$80.00 | <b>\$0.00</b> |

Multiple Dependent Claims (check if applicable).

**TOTAL OF ABOVE CALCULATIONS = \$1,000.00**

Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable).  **\$0.00**

**SUBTOTAL = \$1,000.00**

Processing fee of **\$130.00** for furnishing the English translation later than  20  30 months from the earliest claimed priority date (37 CFR 1.492 (f)). + **\$0.00**

**TOTAL NATIONAL FEE = \$1,000.00**

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable).  **\$0.00**

**TOTAL FEES ENCLOSED = \$1,000.00**

**Amount to be: refunded** **\$**

**charged** **\$**

A check in the amount of \_\_\_\_\_ to cover the above fees is enclosed.

Please charge my Deposit Account No. **19-4675** in the amount of **\$1,000.00** to cover the above fees. A duplicate copy of this sheet is enclosed.

The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **19-4675** A duplicate copy of this sheet is enclosed.

**NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.**

SEND ALL CORRESPONDENCE TO:

STRIKER, STRIKER & STENBY  
103 EAST NECK ROAD  
HUNTINGTON, NEW YORK 11743



SIGNATURE

**MICHAEL J. STRIKER**

NAME

**27233**

REGISTRATION NUMBER

**MARCH 28, 2001**

DATE

UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: Group: Attorney Docket # 1536

Applicant(s) : WYNEN, P., ET AL

Serial No. :

Filed : Simultaneously

For : WIPER BLADE FOR CLEANING MOTOR  
VEHICLE WINDOWS

SIMULTANEOUS AMENDMENT

March 27, 2001

Honorable Commissioner of Patents and Trademarks  
Washington, D.C. 20231

SIRS:

Simultaneously with filing of the above identified application  
please amend the same as follows:

In the Claims:

Cancel all claims without prejudice.

Substitute the claims attached hereto.

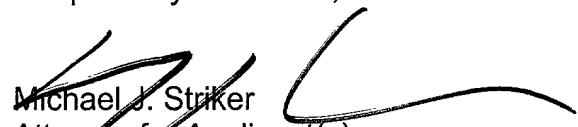
REMARKS:

This Amendment is submitted simultaneously with filing of the above identified application.

With the present Amendment applicant has amended the claims so as to eliminate their multiple dependency.

Consideration and allowance of the present application is most respectfully requested.

Respectfully submitted,

  
Michael J. Striker  
Attorney for Applicant(s)  
Reg. No. 27233

## Claims

1. A wiper blade for cleaning motor vehicle windows, having a wiper strip (12) which is held by a support bracket system (10) and is encompassed by a laterally closed protective profile (14, 22, 24), characterized in that the protective profile (14, 22) is closed in the longitudinal direction (38, 40) on at least one end by a cover (16, 18, 20), which can be used to open and close the protective profile (14, 22).
2. The wiper blade according to claim 1, characterized in that the protective profile (14) is closed with two covers (16, 18).
3. The wiper blade according to claim 1, characterized in that the cover (16, 18, 20) rests against the wiper strip (12).
4. The wiper blade according to claim 1, characterized in that the cover (20) has two closing surfaces (28, 30) and has a symmetry axis (26) lateral to the longitudinal direction (38, 40).
5. The wiper blade according to the preamble to claim 1, characterized in that the protective profile (22, 24) is closed in the longitudinal direction (38, 40) on at least one end by a projection (32, 34, 36) that is directed inward, lateral to the longitudinal direction (38, 40).

DRAFT  
REVISION  
DATE: 01/01/2024

6. The wiper blade according to claim 5, characterized in that the projection (32, 34, 36) is let into a first side wall (42, 44) of the protective profile (22, 24).
7. The wiper blade according to claim 6, characterized in that between the projection (34) and a second side wall (46), the protective profile (24) has a gap (48), which can be used to guide the wiper strip (12) with a wiper lip (132) during installation and removal.
8. The wiper blade according to claim 7, characterized in that the length (50) of the projection (34) decreases toward the window and the gap (48) is embodied as approximately uniform in width.
9. The wiper blade according to claim 8, characterized in that in the longitudinal direction (38) toward the end face (54), the projection (34) has a bevel (56), which is inclined inward in the longitudinal direction (40) and deflects the wiper lip (132) of the wiper strip (12) toward the gap (48) during installation.
10. The wiper blade according to claim 8, characterized in that in the longitudinal direction (40) toward the inside, the projection (34) has a bevel (58), which is inclined outward in the longitudinal direction (38) and deflects the wiper lip (132) of the wiper strip (12) toward the gap (48) during removal.
11. The wiper blade according to claim 9, characterized in that the inwardly inclined bevel (56) is flatter than the outwardly inclined bevel (58).

12. The wiper blade according to claim 5, characterized in that the protective profile (24) has two projections (34, 36) whose distance (60) from each other is equal to the length (62) of the wiper strip (12).

13. A method for producing a wiper blade according to claim 5, characterized in that the protective profile (22, 24) is made of plastic and the projection (32, 34, 36) is produced with an ultrasonic source.

Claims

1. A wiper blade for cleaning motor vehicle windows, having a wiper strip (12) which is held by a support bracket system (10) and is encompassed by a laterally closed protective profile (14, 22, 24), characterized in that the protective profile (14, 22) is closed in the longitudinal direction (38, 40) on at least one end by a cover (16, 18, 20), which can be used to open and close the protective profile (14, 22).
2. The wiper blade according to claim 1, characterized in that the protective profile (14) is closed with two covers (16, 18).
3. The wiper blade according to [one of the preceding claims] claim 1, characterized in that the cover (16, 18, 20) rests against the wiper strip (12).
4. The wiper blade according to [one of the preceding claims] claim 1, characterized in that the cover (20) has two closing surfaces (28, 30) and has a symmetry axis (26) lateral to the longitudinal direction (38, 40).
5. The wiper blade according to the preamble to claim 1, characterized in that the protective profile (22, 24) is closed in the longitudinal direction (38, 40) on at least one end by a projection (32, 34, 36) that is directed inward, lateral to the longitudinal direction (38, 40).

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6. The wiper blade according to claim 5, characterized in that the projection (32, 34, 36) is let into a first side wall (42, 44) of the protective profile (22, 24).
7. The wiper blade according to claim 6, characterized in that between the projection (34) and a second side wall (46), the protective profile (24) has a gap (48), which can be used to guide the wiper strip (12) with a wiper lip (132) during installation and removal.
8. The wiper blade according to claim 7, characterized in that the length (50) of the projection (34) decreases toward the window and the gap (48) is embodied as approximately uniform in width.
9. The wiper blade according to claim 8, characterized in that in the longitudinal direction (38) toward the end face (54), the projection (34) has a bevel (56), which is inclined inward in the longitudinal direction (40) and deflects the wiper lip (132) of the wiper strip (12) toward the gap (48) during installation.
10. The wiper blade according to claim 8 [or 9], characterized in that in the longitudinal direction (40) toward the inside, the projection (34) has a bevel (58), which is inclined outward in the longitudinal direction (38) and deflects the wiper lip (132) of the wiper strip (12) toward the gap (48) during removal.
11. The wiper blade according to [claims 9 and 10] claim 9, characterized in that the inwardly inclined bevel (56) is flatter than the outwardly inclined bevel (58).

12. The wiper blade according to [one of claims 5 to 11] claim 5, characterized in that the protective profile (24) has two projections (34, 36) whose distance (60) from each other is equal to the length (62) of the wiper strip (12).

13. A method for producing a wiper blade according to [one of claims 5 to 12] claim 5, characterized in that the protective profile (22, 24) is made of plastic and the projection (32, 34, 36) is produced with an ultrasonic source.

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JC03 Rec'd PCT/PTO 28 MAR 2001

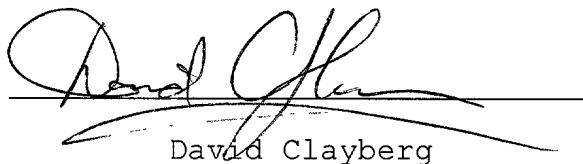
**VERIFICATION OF TRANSLATION**

I, DAVID CLAYBERG

of 948 15<sup>th</sup> St., Ste. 4  
Santa Monica, CA 90403-3134

declare that I am a certified translator well acquainted with both the German and English languages, and that the attached is an accurate translation, to the best of my knowledge and ability, of the attached German-language document.

Signature



A handwritten signature in black ink, appearing to read "David Clayberg". It is written in a cursive style with a large, stylized 'D' at the beginning.

David Clayberg

Date March 26, 2001

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8/PR+5

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Wiper Blade for Cleaning Motor Vehicle Windows

## Prior Art

The invention is based on a wiper blade according to the features contained in the preamble to claim 1.

Known wipers have a wiper arm, which is comprised of a fastening part that is attached to a drive axle, a hinge part connected to it via a toggle joint, and a wiper rod rigidly connected to the hinge part. The wiper also has a wiper blade with a support bracket system and a wiper strip supported by this support bracket system. The wiper blade is attached to the wiper arm by virtue of the fact that a hook-shaped end of the wiper rod engages between two side walls of the support bracket system and encloses a hinge pin. The resulting hinge guides the wiper blade with the wiper strip over a motor vehicle window, wherein the hinge part and the support bracket system make it possible for the wiper strip to adapt to a curvature of the motor vehicle window. A required pressure of the wiper strip against the motor vehicle window is achieved with at least one tension spring which braces the fastening part and the hinge part together with the wiper rod by means of the toggle joint.

The wiper strip is comprised of an elastomer, e.g. a natural or synthetic rubber, or of ethylene propylene. It has a top strip which is connected via a tilting rib to a wiper lip that rests against the window to be wiped. By means of the tilting rib, the wiper lip can turn over into the opposite direction at a reversal point of the wiping direction, so that it always assumes a favorable angle in

relation to the windshield. When the wiper is actuated, the wiper strip sweeps with the wiper lip across the motor vehicle window, wherein the wiper lip gets worn down by friction between itself and the windshield. In addition, environmental influences act on the wiper strip, e.g. temperature fluctuations, UV radiation, salt water, exhaust, etc., which can lead to a premature aging of the material and to an increased wear.

A known strategy for assuring that the wiper strip is in perfect condition when a new motor vehicle is delivered is to cover the wiper strip with a protective profile before the vehicle is conserved. The protective profile is only removed when the new motor vehicle is transferred to a buyer after a final conservation. However, if the windshield becomes soiled or the visibility is hindered by rain during temporary storage of the motor vehicle or during conservation, the windshield cannot be cleaned with the wiper system of the motor vehicle for purposes of maneuvering the vehicle. The protective profile is rigid, hard, and rests only partially against the windshield.

DE 30 05 965 A1 has proposed fastening the longitudinal edge of a flexible band to the side of the protective profile oriented toward the windshield. The protective profile is comprised of hard PVC and the band is comprised of soft PVC. If the wiper is actuated, the band is tilted over, more or less over the length of the wiper blade, and is therefore in a position to adapt to the curvature of the windshield within certain limits. The band functions as a wiper lip, as a result of which the wiper system can be used to clean the windshield during maneuvers without wearing down the actual wiper strip of the wiper blade.

In order to fasten the protective profile to the wiper blade in captive fashion and to protect the wiper strip laterally from environmental influences, another known method is to weld the protective profile shut laterally. To this end, the protective profile is heated at the lateral end faces and is pressed against a plate. This produces a material plate which closes the protective profile. Only one end face can be welded shut before installation. If the second end face is welded shut after the protective profile is slid onto the wiper strip, the protective profile must be cut off in order to be removed.

#### Advantages of the Invention

According to the invention, a protective profile is closed in the longitudinal direction with a cover on at least one end, which can be used to advantageously open and close the protective profile a number of times for installation and removal. The cover can be slid onto the protective profile and can be fastened to the protective profile by means of a detachable frictionally and/or positively engaging connection. In addition, the cover can be connected to the protective profile in captive fashion and can be fixed in a closed position and/or an open position by means of detent means, for example in a cover, which is connected to the protective profile in captive fashion via a hinge, by means of a rotating motion, or in a cover which is connected to the protective profile via a strip, by means of a straight linear motion, etc.

With the cover according to the invention, the installation and removal are simple and inexpensive. The protective profile can advantageously be closed at both ends without the protective profile having to be destroyed when it is removed. The protective profile can be reused after removal. The cover can be combined with other closures, for example with a welded end, but it is advantageous to close the protective profile with two covers. In one embodiment, the proposal is made to close the protective profile with two covers, which rest against the wiper strip. The protective profile is protected at both ends from environmental influences, is fastened to the wiper strip in captive fashion, and is fixed in both longitudinal directions so that during operation of the wiper, friction and wear between the protective strip and the wiper strip are prevented.

With a cover which has two closing surfaces and a symmetry axis lateral to the longitudinal direction, there are at least two possibilities for installation of the cover, namely rotated by 180° from each other around the symmetry axis. The installation is simplified and the second closing surface can advantageously be used as a grip during removal.

In another embodiment, the proposal is made that the protective profile be closed in the longitudinal direction on at least one end by means of a projection that is directed inward, lateral to the longitudinal direction. The projection can be simply and rapidly produced, for example when the profiles are metal, with a kind of pliers and when the profiles are plastic, with a heat source, and in a particularly advantageous manner, with an ultrasonic source.

A protective profile, which has a gap between a second side wall and the projection formed into a first side wall - which gap can be used to guide the wiper strip with a wiper lip during installation and removal, can already be closed by means of two projections at each end when it is manufactured. Assembly steps in the wiper for closing the protective profile are eliminated, the installation time is reduced, and the installation is simplified and cheaper. Additional components, such as covers are eliminated. Furthermore, a protective profile that is closed at both ends can be removed without being destroyed. The protective profile can be reused a number of times, which is good for the environment and reduces the amount of energy consumed, e.g. for recycling.

In order to be able to slide the protective profile onto the wiper strip more easily during installation, in the longitudinal direction toward the end face, the projection has an inwardly inclined bevel which deflects the wiper lip of the wiper strip toward the gap during installation. In the longitudinal direction, the projection has a second, outwardly inclined, advantageously steeper bevel which facilitates a reliable securing of the protective profile to the wiper strip during operation of the wiper and facilitates a damage-free removal by deflecting the wiper lip of the wiper strip into the gap.

The closure with a projection can be combined with other closures, for example a cover or a welded-shut end face. However, it is advantageous to close the protective profile with a projection at both ends. In order to fix the protective profile in both longitudinal directions, the distance between the projections is advantageously equal to

the length of the wiper strip. Friction and wear are prevented between the protective strip and the wiper strip.

## Drawings

Other advantages ensue from the following description of the drawings. Exemplary embodiments of the invention are shown in the drawings. The drawings, the specification, and the claims contain numerous features in combination. The specialist will also suitably consider the features individually and will arrange them in other logical combinations.

Fig. 1 shows a detail of a wiper blade,

Fig. 2 shows an enlarged section along the line II - II in Fig. 1,

Fig. 3 shows an enlarged view of a detail III in Fig. 1,

Fig. 4 shows a section along the line IV - IV in Fig. 3,

Fig. 5 shows a cover,

Fig. 6 shows a section along the line VI - VI in Fig. 5,

Fig. 7 shows a variant on Fig. 5,

Fig. 8 shows a section along the line VIII - VIII in Fig. 7,

Fig. 9 shows a cover according to Fig. 7 when installed,

Fig. 10 shows a variant of a protective profile according to Fig. 1,

Fig. 11 shows a section along the line XI - XI in Fig. 10,

Fig. 12 shows a variant of a protective profile according to Fig. 10,

Fig. 13 shows a section along the line XIII - XIII in Fig. 12, and

Fig. 14 shows a section along the line XIV - XIV in Fig. 12.

#### Description of the Exemplary Embodiments

Fig. 1 shows a detail of a wiper blade, which has a support bracket system 10 with a main bracket 64 that is pivotably connected to intermediary brackets 66 whose ends are connected to claw brackets 68, 70. A wiper strip 12 is held by securing claws 72 of the claw brackets 68, 70. In order to protect the wiper strip 12 from heat and other environmental influences before delivery to a buyer, it is encompassed by a protective profile 14 which has a wiper element 74 attached to its side oriented toward the windshield.

The protective profile 14 is comprised of an elastic plastic, namely polypropylene, and can be adapted to curvatures of the windshield by means of elastic deformation. The protective profile 14 has an elongated

hollow profile with two side walls 76, 78 that encompass the wiper strip 12, and is fastened with claw-like projections 80, 82 to the wiper strip 12 in the vicinity of a tilting rib 84 and tapers from the wiper strip 12 toward the windshield (Fig. 2). Each side wall 76, 78 has two turning points 86, 88, 90, 92, which constitute projecting points for an elastic deformation and encourage this deformation. It is also possible for there to be a number of turning points, for example wavy side walls. Furthermore, the elastic deformability is encouraged by means of a profile that is rounded toward the windshield, preferably in the shape of a pear, and by means of a wall thickness 94 of less than 0.8 mm. Advantageously, the wall thickness 94 is uniformly 0.6 mm in the exemplary embodiment shown, but it can be varied.

Fig. 3 shows an enlarged detail III in Fig. 1. The protective profile 14 is closed at both ends in the longitudinal direction 38, 40 by a plastic cover 16, 18. The covers 16, 18 are slid onto the protective profile 14 and are detachably connected to it with frictional engagement by means of three pins 98, 100, 102 that rest against the inside 96 of the protective profile 14 and by means of a collar 106 disposed on the cover side 104 of the protective profile 14 (Figs. 4, 5, and 6). In order to be able to easily mount or slide the covers 16, 18 onto the protective profile 14, the collar 106 and the pins 98, 100, 102 have phases 108, 110, 112, 114. The covers 16, 18 can be taken off the protective profile 14 for its removal.

The protective profile 14 is fastened to the wiper blade in captive fashion, the wiper strip 12 is protected laterally from environmental influences, and the protective

profile 14 is easy to install and remove with the covers 16, 18. In particular, a protective profile 14 that is closed at both ends can be reused with at least one cover 16 or 18 after being removed. In order to prevent the protective profile 14 from moving on the wiper strip 12 during operation of the wiper and causing friction and wear, the covers 16, 18 rest with the collar 106 against the wiper strip 12 and fix the protective profile in both longitudinal directions 38, 40 (Figs. 1 and 3). The elasticity of the protective profile 14 is only affected to an insignificant degree by the covers 16, 18, which rest only partially against the protective profile 14. The side walls 76, 78 can be deflected inward when there is an elastic deformation of the protective profile 14, without being hindered by the covers 16, 18 (Fig. 4).

Figs. 7, 8, and 9 show a cover 20, which in addition to a frictional engagement, is detachably fastened by means of pins 116, 118, 120, 122 in openings 124, 126 in side walls 42, 130 of a protective profile 22 (Figs. 10 and 11). The cover 20 has a symmetry axis 26 lateral to the longitudinal direction 38, 40, a symmetry axis 128 perpendicular to the longitudinal direction 38, 40, and two closing surfaces 28, 30 which are respectively matched to the cross sectional geometry of the protective profile 22. The cover 20 can be respectively rotated around the symmetry axes 26, 128 by  $180^\circ$  and can therefore be installed in four different ways. The installation is simplified and the second closing surface 28 or 30 protruding beyond the protective profile 22 can advantageously be used as a grip during removal.

The protective profile 22 can be closed in the longitudinal direction 40 by the cover 20 and is closed in

the longitudinal direction 38 at a second end with a projection 32 that is oriented lateral to the longitudinal direction 38, 40 (Fig 10). The protective profile 22 is made of plastic and the projection 32 is let into the side wall 42 with an ultrasonic source and protrudes until it reaches to the second side wall 130.

Figs. 12, 13, and 14 show a protective profile 24, which is closed in the longitudinal direction 38, 40 at both of its ends by means of projections 34, 36, which are let into a side wall 44 and are directed inward lateral to the longitudinal direction 38, 40. The projections 34, 36 are formed into the side wall 44 of the plastic protective profile 24 with an ultrasonic source or ultrasound waves.

The length 50 of the projection 34 decreases toward the windshield in such a way that an approximately uniform gap 48 is produced between the projection 34 and a second side wall 46, and this gap can be used to guide the wiper strip 12 with a wiper lip 132 (Fig. 2) without damaging it during installation and removal (Figs. 13 and 14). The projection 34 tapers lateral to the longitudinal direction 38, 40 and, oriented toward the end face 54, has an inwardly inclined first, flatter bevel 56 of  $30^\circ$ , which deflects the wiper lip 132 of the wiper strip 12 toward the gap 48 during installation and facilitates installation (Fig. 14). In the longitudinal direction 40 toward the inside, the projection 34 also has a second, outwardly inclined, steeper bevel 58 of  $10^\circ$ , which assures a secure fastening of the protective profile 24 to the wiper strip 12 during the operation of the wiper and facilitates a non-damaging removal.

The projection 36 is the same shape as the projection 34, with a flatter bevel, not shown in detail, toward the end face 52 and a steeper bevel toward the inside. The projections 34, 36 are disposed at a distance 60 from each other, which is equal to a length 62 of the wiper strip 12 (Figs. 12 and 1). Friction between the protective profile 24 and the wiper strip 12 is prevented and the protective profile 24 is fastened to the wiper blade in a captive, reusable fashion. Furthermore, the wiper strip 12 is protected laterally from environmental influences. The projections 34, 36 extend over only a small part of the circumference of the protective profile 24 so that the elastic deformability is only impaired to an insignificant degree.

Claims

1. A wiper blade for cleaning motor vehicle windows, having a wiper strip (12) which is held by a support bracket system (10) and is encompassed by a laterally closed protective profile (14, 22, 24), characterized in that the protective profile (14, 22) is closed in the longitudinal direction (38, 40) on at least one end by a cover (16, 18, 20), which can be used to open and close the protective profile (14, 22).

2. The wiper blade according to claim 1, characterized in that the protective profile (14) is closed with two covers (16, 18).

3. The wiper blade according to one of the preceding claims, characterized in that the cover (16, 18, 20) rests against the wiper strip (12).

4. The wiper blade according to one of the preceding claims, characterized in that the cover (20) has two closing surfaces (28, 30) and has a symmetry axis (26) lateral to the longitudinal direction (38, 40).

5. The wiper blade according to the preamble to claim 1, characterized in that the protective profile (22, 24) is closed in the longitudinal direction (38, 40) on at least one end by a projection (32, 34, 36) that is directed inward, lateral to the longitudinal direction (38, 40).

6. The wiper blade according to claim 5, characterized in that the projection (32, 34, 36) is let into a first side wall (42, 44) of the protective profile (22, 24).

7. The wiper blade according to claim 6, characterized in that between the projection (34) and a second side wall (46), the protective profile (24) has a gap (48), which can be used to guide the wiper strip (12) with a wiper lip (132) during installation and removal.

8. The wiper blade according to claim 7, characterized in that the length (50) of the projection (34) decreases toward the window and the gap (48) is embodied as approximately uniform in width.

9. The wiper blade according to claim 8, characterized in that in the longitudinal direction (38) toward the end face (54), the projection (34) has a bevel (56), which is inclined inward in the longitudinal direction (40) and deflects the wiper lip (132) of the wiper strip (12) toward the gap (48) during installation.

10. The wiper blade according to claim 8 or 9, characterized in that in the longitudinal direction (40) toward the inside, the projection (34) has a bevel (58), which is inclined outward in the longitudinal direction (38) and deflects the wiper lip (132) of the wiper strip (12) toward the gap (48) during removal.

11. The wiper blade according to claims 9 and 10, characterized in that the inwardly inclined bevel (56) is flatter than the outwardly inclined bevel (58).

12. The wiper blade according to one of claims 5 to 11, characterized in that the protective profile (24) has two

projections (34, 36) whose distance (60) from each other is equal to the length (62) of the wiper strip (12).

13. A method for producing a wiper blade according to one of claims 5 to 12, characterized in that the protective profile (22, 24) is made of plastic and the projection (32, 34, 36) is produced with an ultrasonic source.

## Abstract

The invention is based on a wiper blade for cleaning motor vehicle windows, having a wiper strip (12) which is held by a support bracket system (10) and is encompassed by a laterally closed protective profile (14, 22, 24).

The proposal is made that the protective profile (14, 22) be closed in the longitudinal direction (38, 40) on at least one end by a cover (16, 18, 20), which can be used to open and close the protective profile (14, 22).  
(Fig. 1)

## Reference numerals

|    |                        |    |                      |
|----|------------------------|----|----------------------|
| 10 | support bracket system | 50 | length               |
| 12 | wiper strip            | 52 | end face             |
| 14 | protective profile     | 54 | end face             |
| 16 | cover                  | 56 | bevel                |
| 18 | cover                  | 58 | bevel                |
| 20 | cover                  | 60 | distance             |
| 22 | protective profile     | 62 | length               |
| 24 | protective profile     | 64 | main bracket         |
| 26 | symmetry axis          | 66 | intermediary bracket |
| 28 | closing surface        | 68 | claw bracket         |
| 30 | closing surface        | 70 | claw bracket         |
| 32 | projection             | 72 | securing claws       |
| 34 | projection             | 74 | wiper element        |
| 36 | projection             | 76 | side walls           |
| 38 | longitudinal direction | 78 | side walls           |
| 40 | longitudinal direction | 80 | projection           |
| 42 | side wall              | 82 | projection           |
| 44 | side wall              | 84 | tilting rib          |
| 46 | side wall              | 86 | turning point        |
| 48 | gap                    | 88 | turning point        |

90 turning point  
92 turning point  
94 wall thickness  
96 inside  
98 pin  
100 pin  
102 pin  
104 cover side  
106 collar  
108 phase  
110 phase  
112 phase  
114 phase  
116 pin  
118 pin  
120 pin  
122 pin  
124 opening  
126 opening  
128 symmetry axis  
130 side wall  
132 wiper lip

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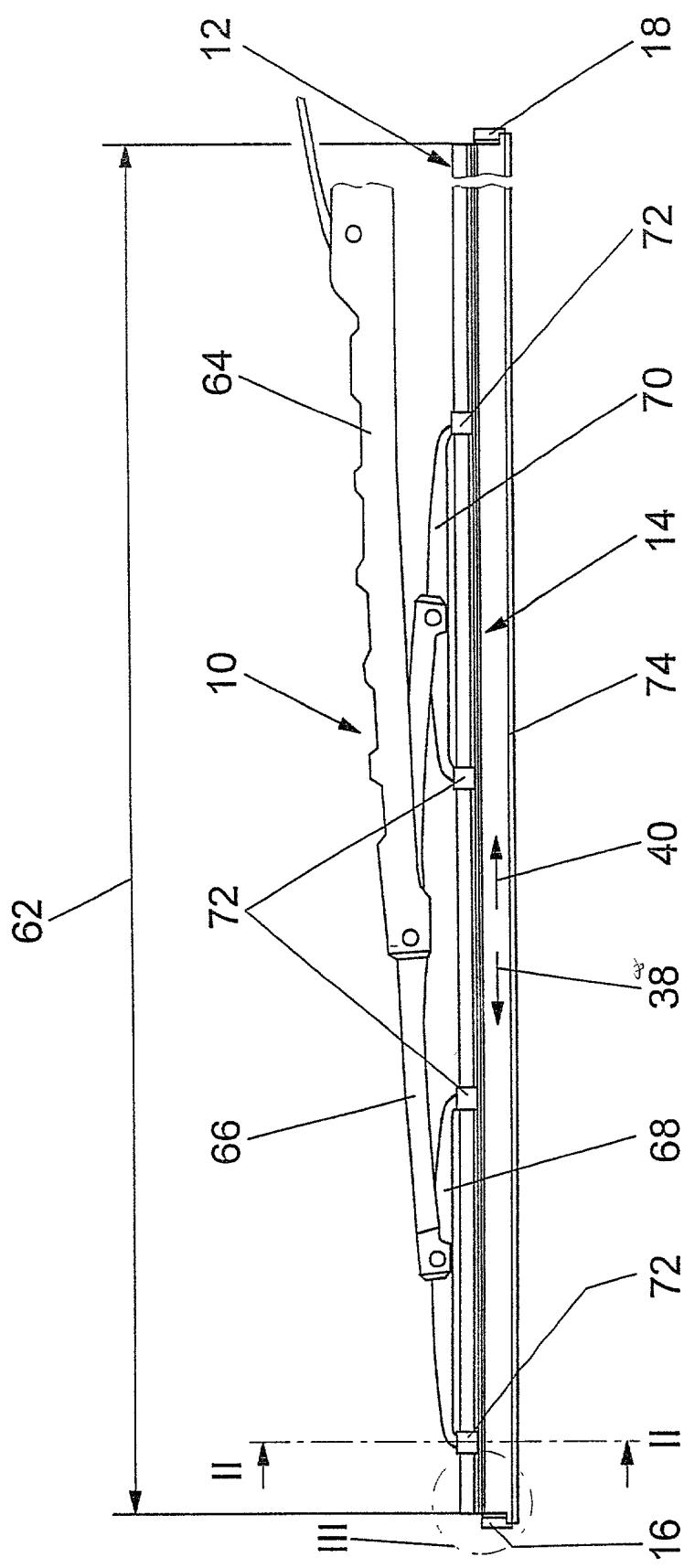


Fig. 1

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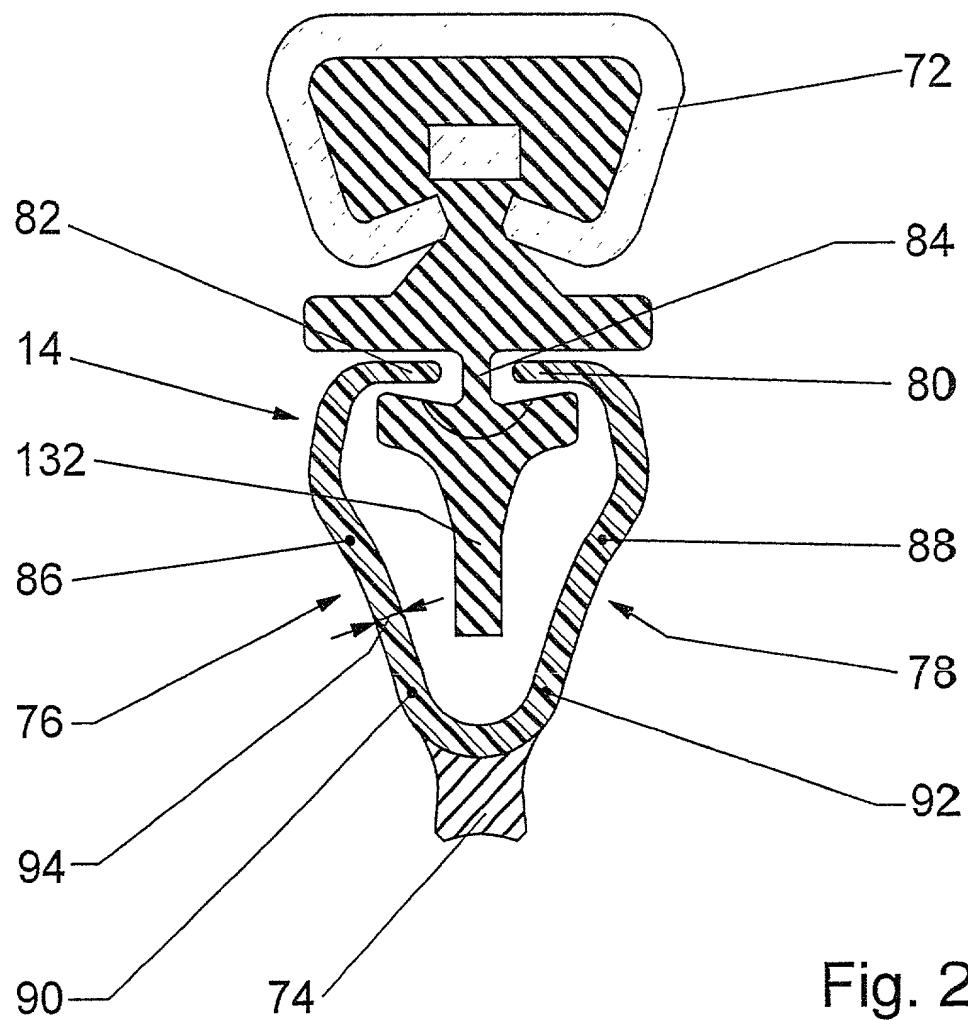


Fig. 2

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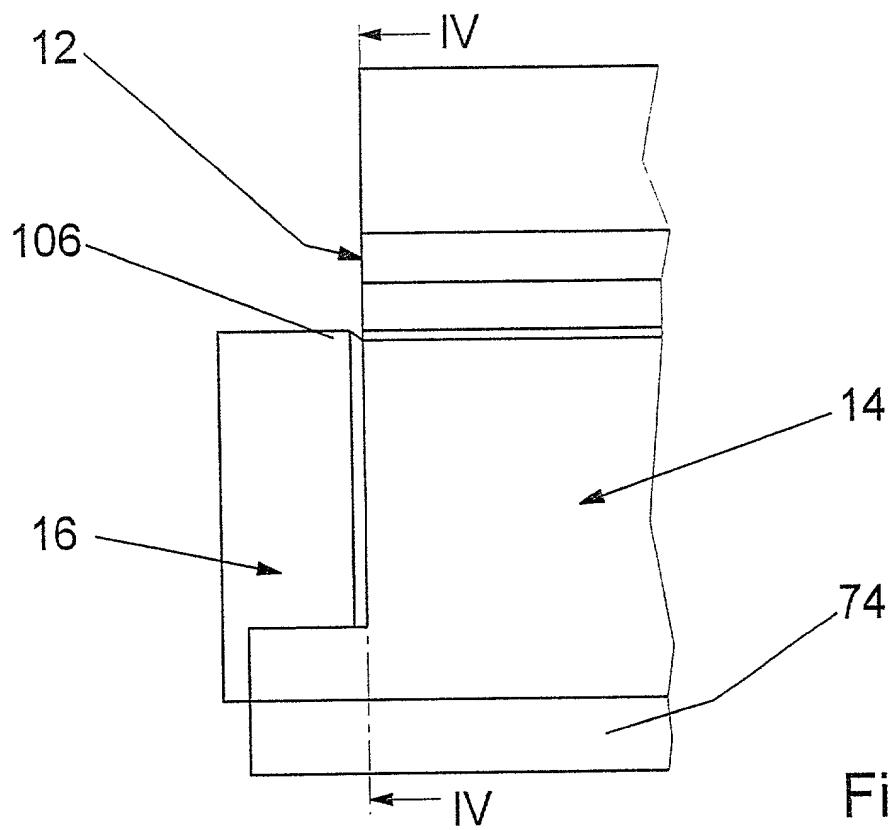


Fig. 3

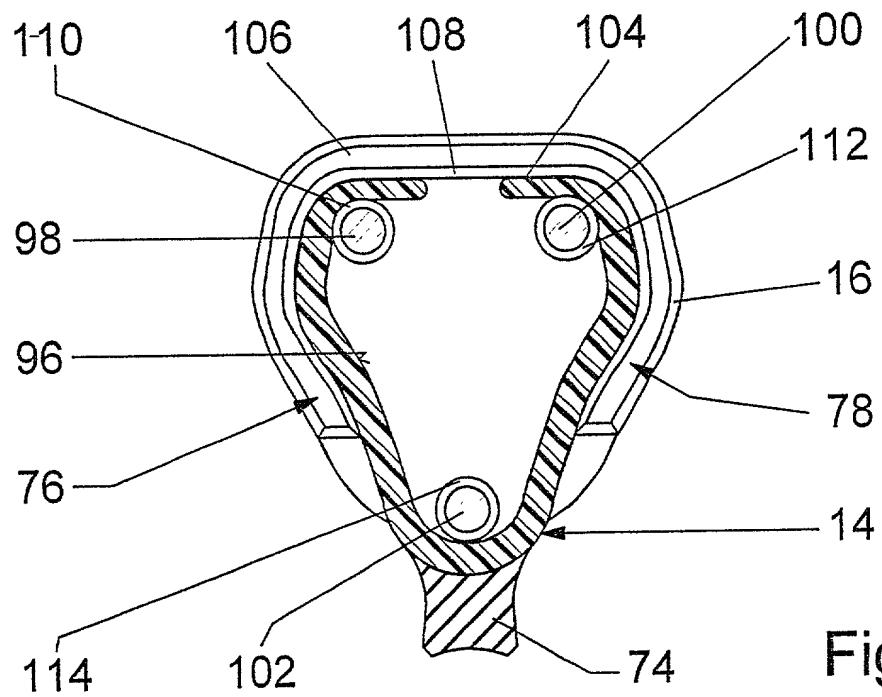


Fig. 4

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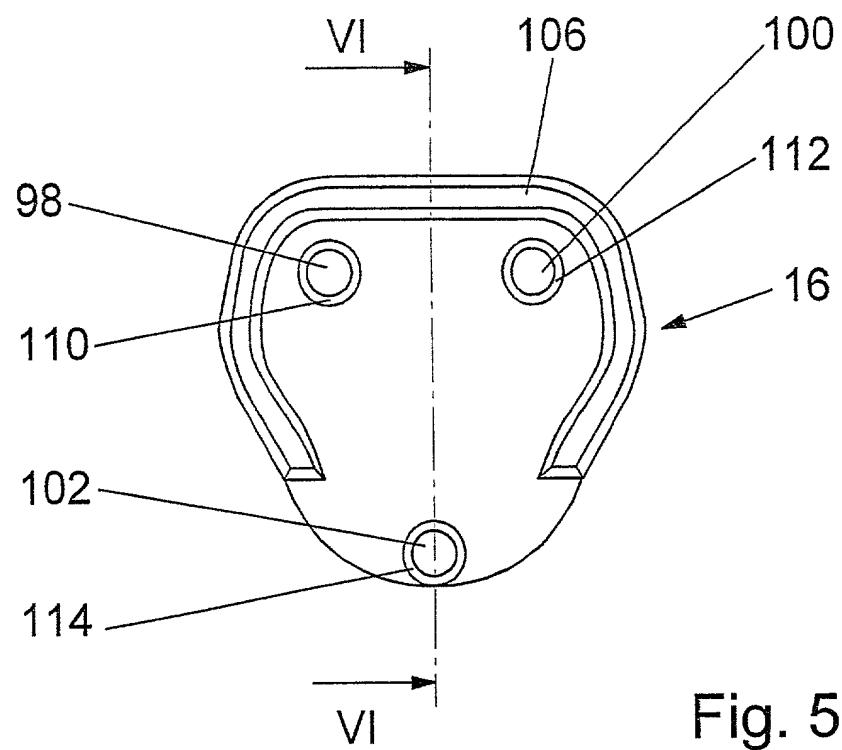


Fig. 5

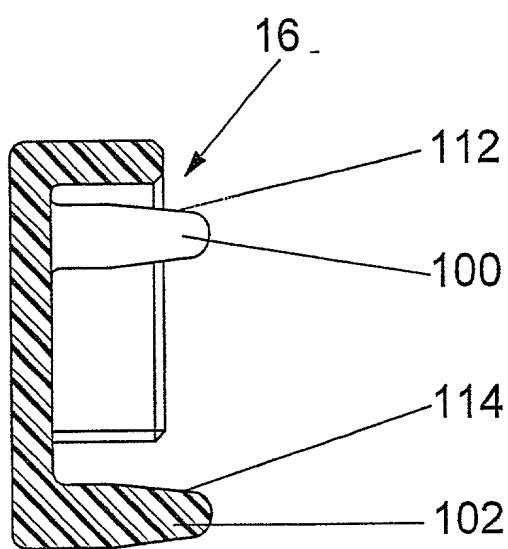


Fig. 6

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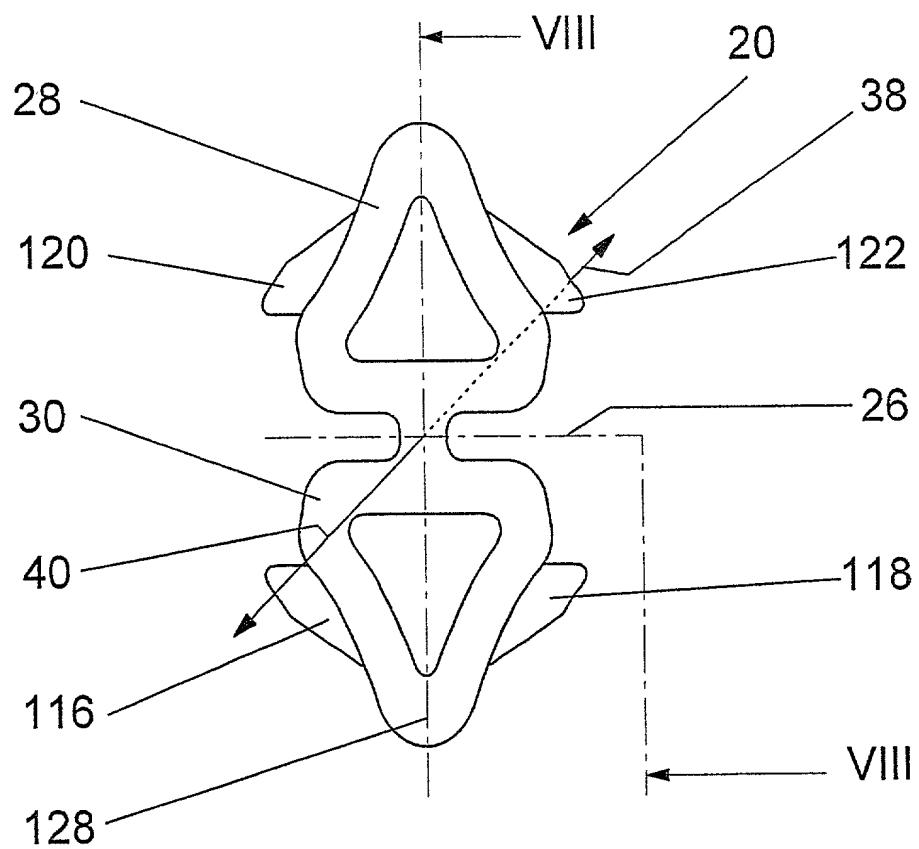


Fig. 7

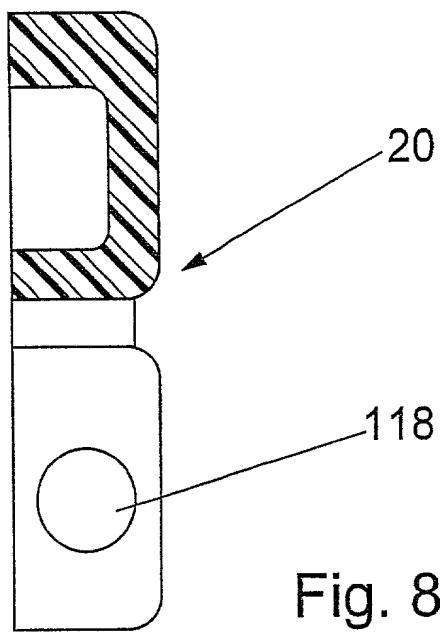


Fig. 8

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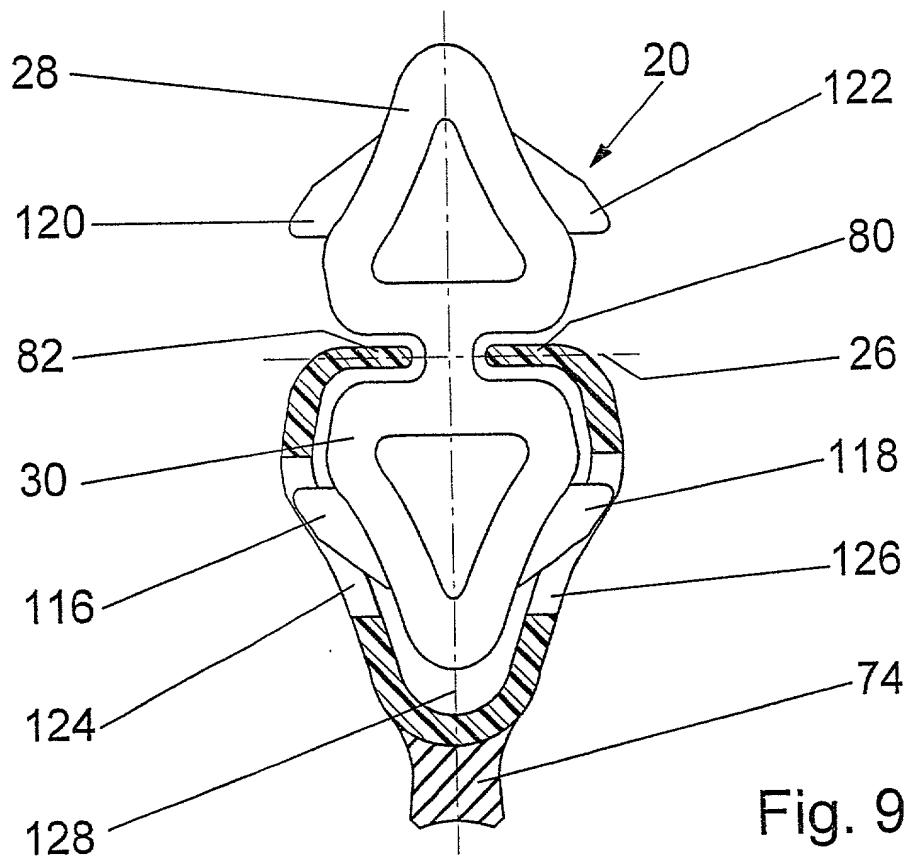


Fig. 9

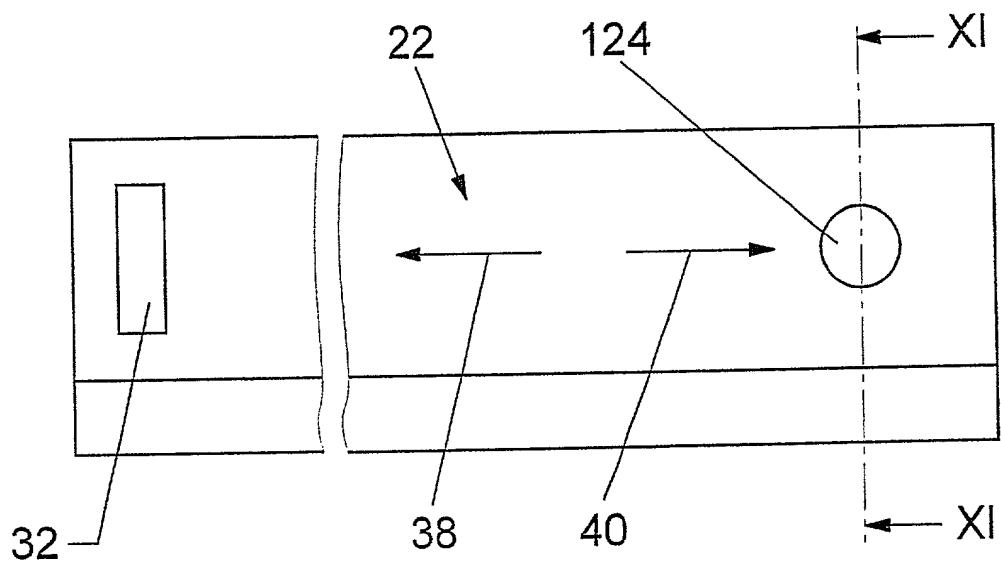


Fig. 10

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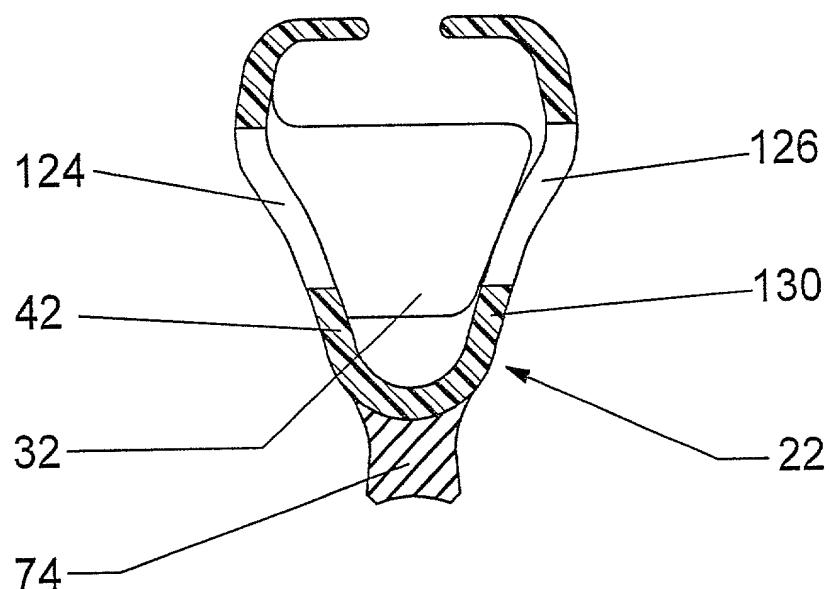


Fig. 11

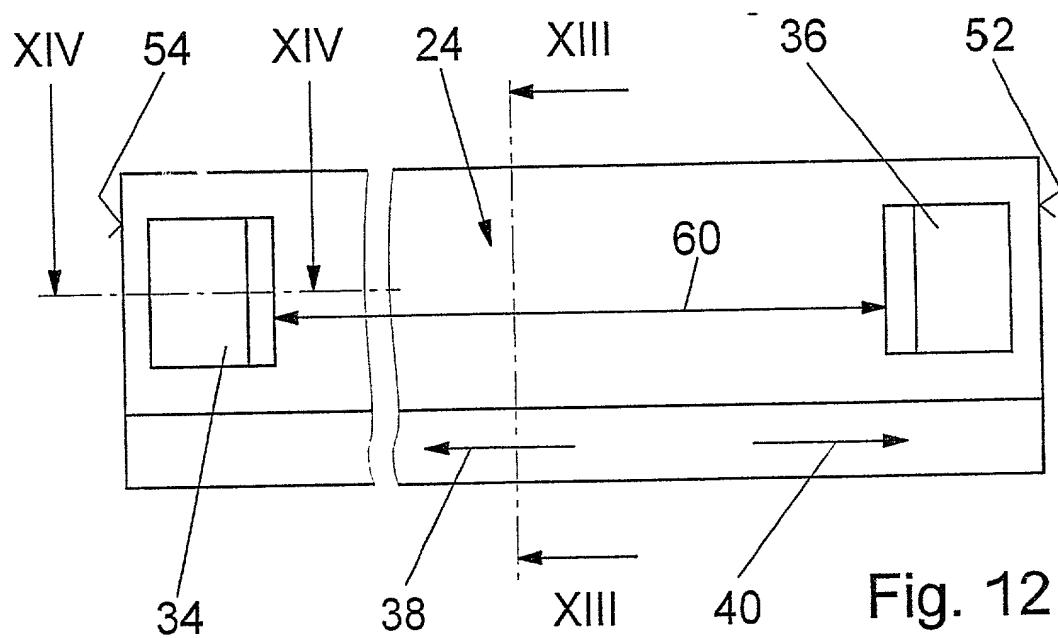
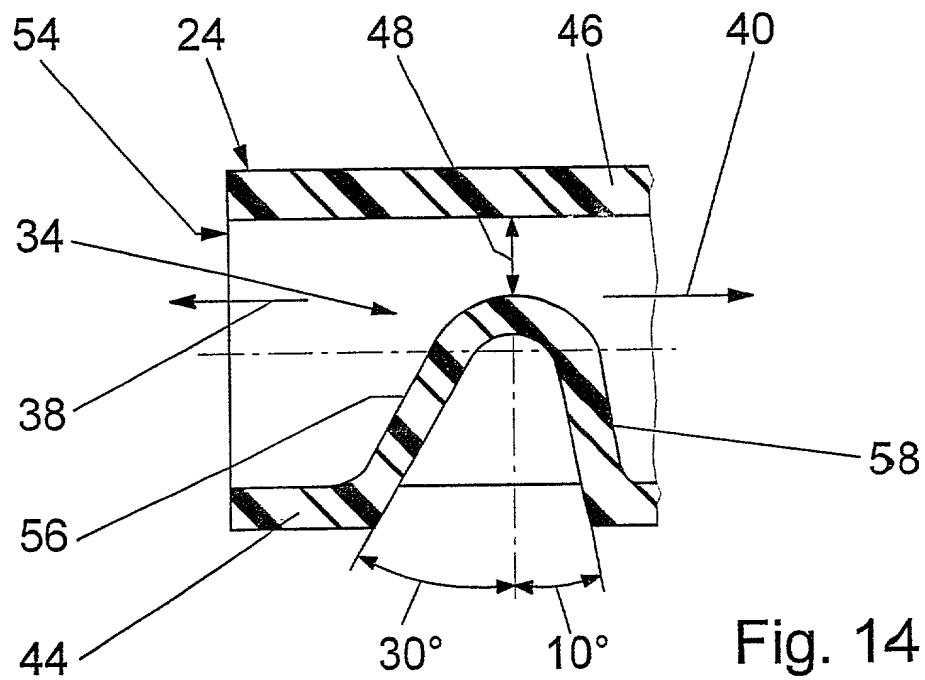
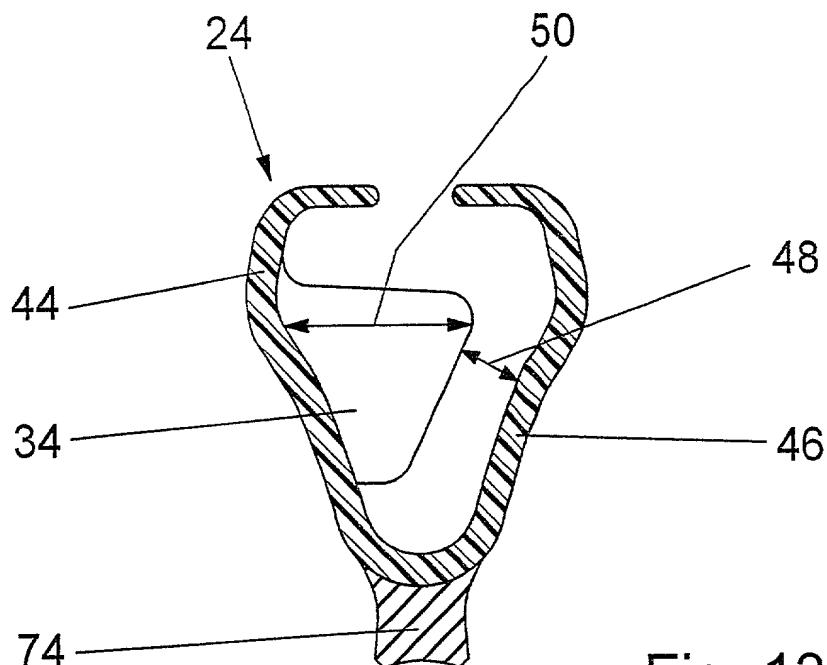


Fig. 12

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R 35196

DECLARATION AND POWER OF ATTORNEY FOR NATIONAL STAGE OF PCT PATENT APPLICATION

As a below-named inventor, I hereby declare that:

Paul WYNEN  
Dirk HERINCKX  
Jurgen ROEKENS

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **WIPER BLADE FOR CLEANING MOTOR VEHICLE WINDOWS** the specification of which was filed as PCT International Application number PCT/DE 00/02351 filed on July 19, 2000.

I hereby state that I believe the named inventor or inventors in this Declaration to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365 (b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior foreign application(s): Priority claimed:

| 199 35 858.3<br>(Number) | GERMANY<br>(Country) | JULY 30, 1999<br>(Date filed) | X<br>Yes | No |
|--------------------------|----------------------|-------------------------------|----------|----|
| (Number)                 | (Country)            | (Date filed)                  | Yes      | No |

As a named inventor, I hereby appoint the following attorney to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

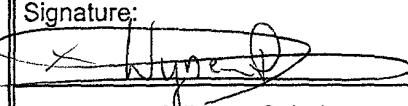
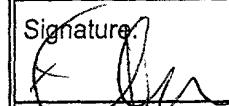
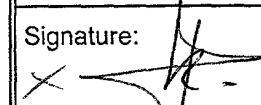
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment,

or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statement may jeopardize the validity of the application or any patent issued thereon.

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| Full Name of Third Inventor:<br>Jurgen ROEKENS  | Citizenship:<br>BELGIAN |  |
| Signature:  | Date:                   | Residence and<br>Full Postal Address:  |
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| Full Name of Fifth Inventor:  | Citizenship:            |  |
| Signature:  | Date:                   | Residence and<br>Full Postal Address:  |
| Full Name of Sixth Inventor:  | Citizenship:            |  |
| Signature:  | Date:                   | Residence and<br>Full Postal Address:  |
| Full Name of Seventh Inventor:  | Citizenship:            |  |
| Signature:  | Date:                   | Residence and<br>Full Postal Address:  |
| Full Name of Eighth Inventor:   | Citizenship:            |  |